OFFIS
HEE

OFFIS Transportation
INSTITUTE FOR INFORMATION TECHNOLOGY

Efficiency is a critical factor for systems that need to be safe, fast, cost-efficient and economic in terms of the cognitive, visual and physiological effort to observe and control them.

HUMAN EFFICIENCY EVALUATOR

The Human Efficiency Evaluator is a software tool for analysing HMI designs for their efficiency already before they are being implemented. The tool can be applied in an early design phase to check the impact of a design change on the user's workload and shifts of attention or for performance changes of the user interacting with the HMI design. Its predictions can impact an HMI design even before it is being built. This saves time and money by preventing costly last-minute changes to an HMI after it has been evaluated with real users.

Based on profound research on psychological and physiological models of the human mind and body the tool can simulate users of an HMI. The HEE has been applied in various research projects with industrial partners to analyse the visual, cognitive and physiological workload of pilots of an aircraft, to evaluate the impact of a new assistance or infotainment system in a car, to analyse task performance of clinical treatments and to compare different maritime navigation support system designs.

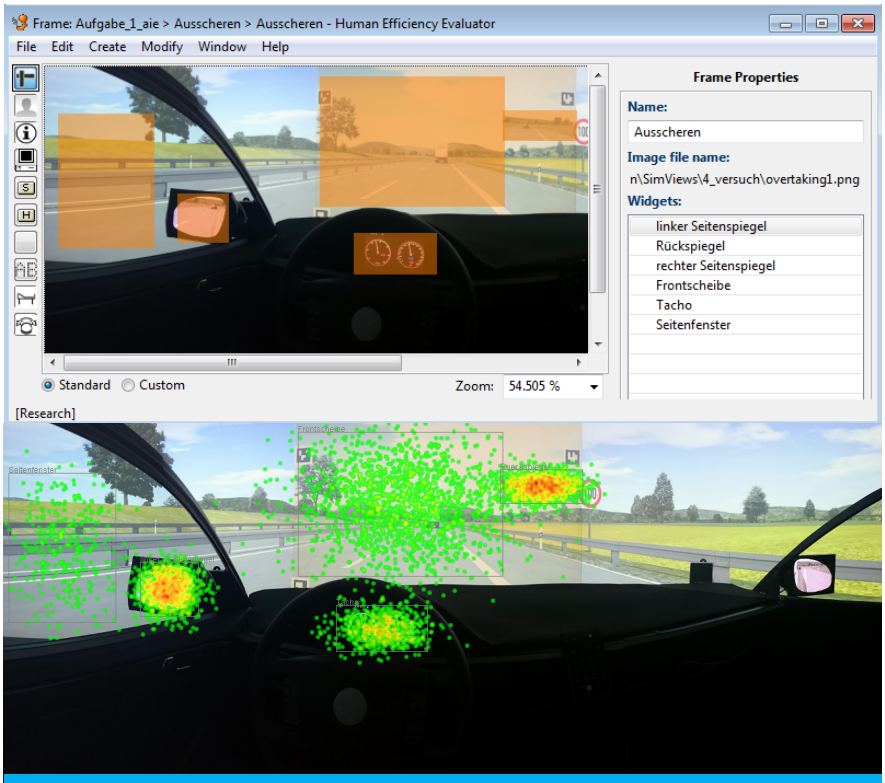
Regulations often limit the time and effort that an operator is allowed to focus on an assistance system while driving, flying, treating a patient, or observing any other safety-critical system. The HEE supports HMI designers' and System Engineers' awareness of HMI design decisions that affect the task performance and workload of the future operator.

Car Driving Simulator with Eye-Tracking at OFFIS

DATA COLLECTION AND ANALYSIS

We at OFFIS have an extensive experience in evaluating HMI designs and prototypes for safety-critical system operation in aeronautics, maritime, health, and automotive systems. Further applications include prediction of reaction times and monitoring behaviour of operators in control room / surveillance setups.

OFFIS conducts studies and collects empirical data using various equipment and setups, like eye-tracking systems and a high-fidelity driving simulator. We have a high expertise in automated data processing of the extensive and complex data collected in such studies and are able to identify efficiency gaps and recommend actions to improve the HMI design as part of analysing the data.



Prediction of the Driver's Attenttion Distribution with the HEE

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